# COURSE DESCRIPTIONS FOR MATHEMATICS

## 04301 MATHEMATICS, GRADE 1

Grade 1 students count to 100, demonstrate fluency with addition facts for totals up to 20 and the corresponding subtraction facts, identify basic geometric shapes, and measure the length of objects.

## 04302 MATHEMATICS, GRADE 2

Grade 2 students understand place value for numbers up to 1,000, add and subtract numbers less than 1,000, describe attributes of common geometric shapes and objects, and understand and use units of linear measurement.

## 04303 MATHEMATICS, GRADE 3

Grade 3 students understand place value for whole numbers up to 10,000, interpret and model fractions, use standard algorithms for addition and subtraction of whole numbers, and understand the meaning of multiplication and division of whole numbers. They identify and draw points and lines and measure the length and weight of objects.

## 04304 MATHEMATICS, GRADE 4

Grade 4 students understand place value for whole numbers, interpret and model decimals, demonstrate fluency with multiplication facts up to 10 and related division facts, multiply numbers up to 100 by single digit numbers and by 10, and model addition and subtraction of simple fractions. They identify and draw various angles and lines and find the perimeter and area of rectangles.

## 04305 MATHEMATICS, GRADE 5

Grade 5 students multiply and divide whole numbers; compare fractions, decimals and common percents; and add and subtract fractions and decimals. They identify polygons and find the perimeter and area of triangles, parallelograms, and trapezoids. They evaluate simple algebraic expressions and use coordinate grids to represent points in the first quadrant that fit linear equations.

## 04306 MATHEMATICS, GRADE 6

Grade 6 students compute with integers; represent numbers as fractions, decimals, and percents; multiply and divide positive decimals and fractions; and solve simple rate and ratio problems. They use properties of triangles and quadrilaterals and find the circumference and

area of circles and the surface area of right prisms and cylinders. They solve on-step equations and inequalities and write equations of linear functions representing a given situation.

## 04307 MATHEMATICS, GRADE 7

Grade 7 students use whole number exponents, use proportions and percentages, and multiply and divide negative decimals and fractions. They use transformations and find the surface area and volume of prisms and cylinders. They simplify expressions, solve two-step equations and inequalities, and graph lines. They create data displays and solve simple probability problems.

## 04308 MATHEMATICS, GRADE 8

Grade 8 students use integer exponents and calculate square roots. They perform basic constructions; use the Pythagorean Theorem and its converse; solve simple problems involving rates and derived measurements; and find the surface area and volume of cones, spheres, and pyramids. They solve multi-step equations and inequalities and use linear equations to solve problems. They analyze data, evaluate claims based on statistical data in simple situations, and compute probabilities of events from simple experiments.

## *2520* ALGEBRA I

*Algebra I* provides a formal development of the algebraic skills and concepts necessary for students to succeed in advanced courses. In particular, the instructional program in this course provides for the use of algebraic skills in a wide range of problem-solving situations. The concept of function is emphasized throughout the course. Topics include: (1) operations with real numbers, (2) linear equations and inequalities, (3) relations and functions, (4) polynomials, (5) algebraic fractions, and (6) nonlinear equations.

## *2522* ALGEBRA II

*Algebra II* is a course that extends the content of Algebra I and provides further development of the concept of a function. Topics include: (1) relations, functions, equations and inequalities; (2) conic sections; (3) polynomials; (4) algebraic fractions; (5) logarithmic and exponential functions; (6) sequences and series; and (7) counting principles and probability.

## *2562* CALCULUS AB, ADVANCED PLACEMENT

*Calculus AB, Advanced Placement* is a course that provides students with the content established by the College Board. Topics include: (1) functions, graphs, and limits, (2) derivatives, and (3) integrals. The use of graphing technology is required.

- Recommended Prerequisite: Pre-Calculus
- Credits: A two credit course
- Counts as a Mathematics Course for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas
- A Career Academic Sequence or Flex Credit course

## *2532* GEOMETRY

*Geometry* students examine the properties of two- and three-dimensional objects. Proof and logic, as well as investigative strategies in drawing conclusions, are stressed. Properties and relationships of geometric objects include the study of: (1) points, lines, angles and planes; (2) polygons, with a special focus on quadrilaterals, triangles, right triangles; (3) circles; and (4) polyhedra and other solids. Use of graphing calculators and computer drawing programs is encouraged.

## *2554* INTEGRATED MATHEMATICS I, II, AND III

*Integrated Mathematics I*, *II, III* provides a formal development of the skills and concepts necessary for students to succeed in advanced courses. In particular, the instructional program in this course provides for the use of skills in a wide range of problem-solving situations. Topics include: (1) algebra and functions, (2) geometry and measurement, (3) data analysis and statistics, (4) probability, (5) discrete mathematics, and (6) trigonometry.

*Integrated Mathematics II* is a course that expands on the topics of Integrated Mathematics I. The instructional program in this course provides for the use of skills in a wide range of problem-solving situations. Topics include: (1) algebra and functions, (2) geometry and measurement, (3) data analysis and statistics, (4) probability, (5) discrete mathematics, and (6) trigonometry.

*Integrated Mathematics III* is a course that expands on the topics of Integrated Mathematics II. The instructional program in this course provides for the use of skills in a wide range of problem-solving situations. Topics include: (1) number sense and computation, (2) algebra and functions, (3) geometry and measurement, (4) data analysis and statistics, (5) probability, and (6) discrete mathematics.

## *2564* PRE-CALCULUS/TRIGONOMETRY

*Pre-Calculus/Trigonometry* blends the concepts and skills that must be mastered before enrollment in a college-level calculus course. The course includes the study of (1) relations and functions, (2) exponential and logarithmic functions, (3) trigonometry in triangles, (4) trigonometric functions, (5) trigonometric identities and equations, (6) polar coordinates and complex numbers, (7) sequences and series and (8) data analysis.

PRE-CALCULUS includes the study of (1) relations and functions, (2) exponential and logarithmic functions, (3) sequences and series, and (4) data analysis.

TRIGONOMETRY includes the study of (1) trigonometry in triangles, (2) trigonometric functions, (3) trigonometric identities and equations, and (4) polar coordinates and complex numbers.